Claims

What is claimed is:

1. A multiple electrode pair array apparatus for use with a multiple well plate having multiple wells distributed in a two-dimensional matrix array having R rows and C columns, comprising: a non-conductive base member,

an array of pairs of electrodes attached to said base member and projecting therefrom, wherein said pairs of electodes are distributed on said base member in a two-dimensional matrix array having R rows and C columns to enable registration with the two-dimensional matrix array of wells, wherein each pair of electrodes includes a respective first electrode and a respective second electrode,

an array of R row conductors attached to said non-conductive base member, wherein each row conductor is electrically connected to corresponding first electrodes in a corresponding row of first electrodes, and

an array of C column conductors attached to said non-conductive base member, wherein said C column conductors are perpendicular to said R row conductors, wherein each column conductor is electrically insulated from said row conductors, wherein each column conductor is electrically connected to corresponding second electrodes in a corresponding column of second electrodes.

2. The apparatus of claim 1 wherein:

said first electrodes and said second electrodes are parallel to each other,

said first electrodes and said R row conductors are parallel to each other, and

said second electrodes and said C column conductors are perpendicular to each other.

3. The apparatus of claim 1 wherein:

said non-conductive base member has a top portion and a bottom portion,

said row conductors and said column conductors are positioned away from the top portion of the said non-conductive base member.

4. The apparatus of claim 1 wherein an adjacent electrode pair spacing gap is provided between a first electrode on one pair of electrodes and second electrode on an adjacent pair of electrodes, such that an inside wall of the multiple well plate is received in said adjacent electrode pair spacing gap.

5. The apparatus of claim 1, further including:

a set of row electrical connection members electrically connected to said row conductors, and

a set of column electrical connection members electrically connected to said column conductors.

6. The apparatus of claim 1 wherein said base member includes a plurality of access channels which are in registration with the wells of the multiple well plate.

7. The apparatus of claim 6 wherein said access channels are circular in shape.